

Serial No. 10/747,722  
Response to OA dated November 29, 2006

IN THE CLAIMS

1. (Currently Amended) A method, comprising:

selectively applying one or more etchants a single etchant comprising a diluted compound of nitric acid and hydrofluoric acid to an edge region of a substrate, said substrate having a central region adjacent to said edge region, wherein a metallization layer stack is formed at least on said central region, said metallization layer stack comprising at least an insulating layer, a barrier layer comprising tantalum and a metal layer comprising copper; and  
removing unwanted material at least of said metal layer and said barrier layer selectively from said edge region, wherein a said first single etchant is applied to remove material of said metal layer and a second etchant is applied to remove material at least of said barrier layer.
2. (Original) The method of claim 1, further comprising removing material of said insulating layer selectively from said edge region.
3. (Cancel)
4. (Canceled)
5. (Cancel)
6. (Cancel)

Serial No. 10/747,722  
Response to OA dated November 29, 2005

7. (Cancel)

8. (Original) The method of claim 1, wherein said substrate is exposed in said edge region during said material removal.

9. (Canceled)

10. (Currently Amended) The method of claim 1, further comprising applying said single etchant at the back side of said substrate to remove unwanted material.

11. (Currently Amended) The method of claim 1, wherein said metal layer ~~comprises~~ ~~copper~~ and is formed by an electro-chemical process.

12. (Currently Amended) A method of reducing contamination of a substrate after formation of a metallization layer stack on said substrate, the method comprising:

selectively removing unwanted material of a metal layer comprising copper and a barrier layer comprising tantalum from an edge region of said substrate by using a first etchant comprising a diluted compound of nitric acid and hydrofluoric acid as the main component; and

removing unwanted metal of said metal layer with a second etchant other than said first etchant from said edge region prior to selectively removing unwanted material with said first etchant.

Serial No. 10/747,722  
Response to OA dated November 29, 2005

13. (Original) The method of claim 12, wherein at least material of a barrier layer of said metallization layer stack is removed.

14. (Original) The method of claim 13, wherein dielectric material is removed so as to expose said substrate at said edge region.

15. (Original) The method of claim 12, wherein unwanted metal of said metallization layer is removed.

16. (Canceled)

17. (Canceled)

18. (Original) The method of claim 12, further comprising removing unwanted material from a back side of said substrate.

19.-22. (Canceled)

23. (Currently Amended) A method, comprising:

selectively applying one or more etchants a single etchant comprising a diluted mixture of hydrofluoric acid and nitric acid to an edge region of a substrate, said substrate having a central region adjacent to said edge region, wherein a metallization layer stack is formed at least on said central region, said metallization layer stack

Serial No. 10/747,722  
Response to OA dated November 29, 2005

comprising at least an insulating layer, a barrier layer comprising tantalum and a metal layer comprising copper, wherein applying said single etchant is performed in an substantially air-tight ambient to substantially avoid the emission of gaseous nitric oxides; and

applying said single etchant to remove removing unwanted material at least of said metal layer and said barrier layer selectively from said edge region.

24. (Previously Presented) The method of claim 23, further comprising removing material of said insulating layer selectively from said edge region.

25. (Cancel)

26. (Cancel)

27. (Cancel)

28. (Currently Amended) The method of claim 23, further comprising applying said single etchant at the back side of said substrate to remove unwanted material.

29. (Currently Amended) The method of claim 23, wherein said metal layer comprises copper and is formed by an electro-chemical process.

Serial No. 10/747,722  
Response to OA dated November 29, 2005

30. (Currently Amended) A method of reducing contamination of a substrate after formation of a metallization layer stack on said substrate, said metallization layer comprising copper, the method comprising:

selectively removing unwanted material from an edge region of said substrate by using a first etchant comprising a diluted compound of nitric acid and hydrofluoric acid as the main component, wherein said selective removal of unwanted material with said first etchant is performed in a protected environment to substantially avoid liberation of gaseous nitric oxide, wherein at least material of a barrier layer of said metallization layer stack and copper of said metallization layer is removed.

31. (Canceled)

32. (Previously Presented) The method of claim 31, wherein dielectric material is removed so as to expose said substrate at said edge region.

33. (Cancel)

34. (Previously Presented) The method of claim 30, further comprising removing unwanted metal with a second etchant other than said first etchant from said edge region prior to selectively removing unwanted material with said first etchant.